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Translator's notes: the original Chinese text contains several grammatical and punctuational errors. The translator tries his best to give the rendition that reflect the meaning the original author tries to convey.

[12] PATENT APPLICATION FOR UTILITY MODEL

LOGO

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F16H 55/17**

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**1 page for patent specification, 1 page
for accompanying diagrams**

[54] THE TITLE OF THE UTILITY MODEL: Flexible Gear

[57] ABSTRACT

This is a detachable and flexible transmission gear consisting of an external ring gear and an inner hub. The elastic elements that comprise the kinematic pair capable of eliminating the impact torsional vibration and collision within the gear transmission system and protecting the gear transmission system and parts as well as increasing the service life of the gears are installed between the cavities of the spokes of both the external ring gear and the inner hub.

Diagram

30

(BJ) No. 1452

CLAIMS

1. A type of detachable and flexible transmission gear, which is consisting of an external ring gear \oplus and an inner hub \oslash . It is characterized by an external ring gear and an inner hub, each having 4-8 spokes with elastic elements situated in between the spokes.
2. According to the description of the gear in Claim 1, the gear is characterized by 8-16 pieces of elastic elements made of organic materials installed between the spokes of the external ring gear \oplus and the inner hub \oslash .
3. According to the description of the gear in Claim 1.2, the gear is characterized by 8-16 small holes distributed on the spokes of both the external ring gear \oplus and the inner hub \oslash .
4. According to the description of the gear in Claim 1.2, the gear is characterized by both elastic elements and the cross sections perpendicular to the stress surfaces being of sectorial or elliptical shapes.
5. According to the description of the gear in Claim 1.2, the gear is characterized by installing baffle plates on the inner hub \oslash .
6. According to the description of the gear in Claim 3, the gear is characterized by installing baffle plates on the inner hub \oslash .

SPECIFICATION

FLEXIBLE GEAR

This utility model involves a detachable transmission gear which is especially suitable for the gear transmission system that is without the axial force.

Currently, the gears used in gear transmission system both at home and abroad are all employing the way of rigid transmission. Because the gear transmission system is rigid, so is the entire system being rigid which is especially the case in the mine industry, metallurgical industry and traffic and transportation industry, whose gear transmission systems have relatively large impact load torsional vibration and collision that is harmful to the parts in the gear transmission system.

The purpose of this utility model is to overcome these above-mentioned deficiencies and to provide a detachable and flexible gear that could not only eliminate the peak and prevent the vibration but also could protect the parts in the gear transmission system and thus converting a rigid transmission system to a flexible transmission system.

The features of this utility model are: the gear is consisted of an external ring gear \oplus , an inner hub \otimes and elastic elements \ominus . The external ring gear \oplus and inner hub \otimes both possess 4-8 spokes. There are 8-16 pieces of elastic elements made of organic materials that comprise the kinematic pair installed between the spokes. The cross sections of these elastic elements are of sectorial shapes or elliptical shapes and are perpendicular to the stress surfaces. There are 4-8 small holes distributed on both the external ring gear \oplus and the inner hub \otimes . Baffle plates are installed on the inner hub \otimes to prevent the elastic elements \ominus from having axial hunting.

This utility model is a type of flexible and detachable transmission gear of safety and dependability. It can be used widely in gear transmission system without torsional clearance. It has very good effects of cushioning and peak elimination against the impact load and torsional vibration within the transmission system, and it can protect the parts in transmission and increase the service life of the gear.

Diagram 1. Partial Sectional View of the Flexible Gear

The following is the detailed description of the diagram according to the more detailed description of the utility model.

The flexible gear involves an external ring gear \oplus , an inner hub \otimes and elastic elements \ominus . The external ring gear \oplus and the inner hub \otimes each has 4 spokes with sectorial elastic elements made of rubber installed in between the spokes to form the kinematic pair. The spokes of the external ring gear \oplus are fixed radially by the external rings of 2 disks of rolling bearings $\opl�$ and $\omin�$; the inner hub is not only mounted radially on the axes, it is also fixed on the inner rings of 2 disks of rolling bearings $\opl�$ and $\omin�$ in order to secure that the external ring gear \oplus and the inner hub \otimes will only move axially with relative

angular displacement. The end covers ④ and ⑤ are used to secure the axial position of the rolling bearings ⑥ and ⑦. The 8 baffle plates ⑧ are fixed with screws on the spokes of the inner hub to prevent the axial hunting of the elastic elements ⑨. Both the external ring gear ⑩ and the inner hub ⑪ have 4 small openings ⑫ which can be used to assemble - disassemble and pretighten the elastic elements while at the same time to serve to dissipate the heat and to lubricate the parts.

THE ACCOMPANYING DIAGRAMS OF THE SPECIFICATION

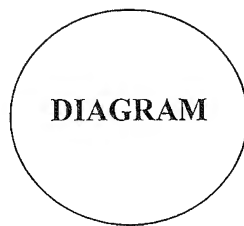
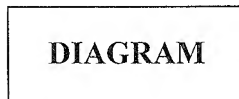


DIAGRAM 1



ELESTIC GEAR

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[12] 实用新型专利申请说明书

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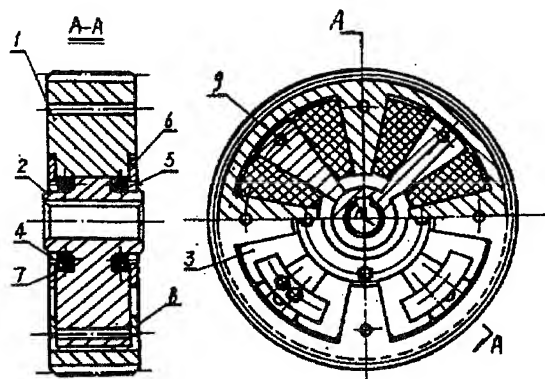
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[54] 实用新型名称 弹性齿轮

[57] 摘要

一种可分式柔性传动齿轮, 该齿轮包括一个外齿圈和一个内轮毂, 在外齿圈和内轮毂的轮辐之间空腔中装有弹性元件组成运动副, 能消除齿轮传动系统中冲击扭转振动和碰撞, 保护齿轮传动系统及传动零部件, 提高齿轮的使用寿命。



权 利 要 求 书

1. 一种可分式柔性传动齿轮, 该齿轮是由外齿圈①, 内轮毂②组成, 其特征在于外齿圈①和内轮毂②分别有4-8根轮辐; 轮辐之间有弹性元件.
2. 按权利要求1所述的齿轮, 其特征在于外齿圈①和内轮毂②的轮辐之间装有8-16块用有机材料制成的弹性元件.
3. 按权利要求1, 2所述的齿轮, 其特征在于外齿圈①和内轮毂②上均布有8-16个小孔.
4. 按权利要求1, 2所述的齿轮, 其特征在于该弹性元件与受力面垂直的横截面是扇形或椭圆形.
5. 按权利要求1, 2所述的齿轮, 其特征在于内轮毂②上装有挡板.
6. 按权利要求3所述的齿轮, 其特征在于内轮毂②上装有挡板.

弹性齿轮

本实用新型涉及一种可分式传动齿轮，尤其适用于无轴向力齿轮传动系统。

目前国内外齿轮传动中的齿轮均采用刚性传动，由于齿轮的这种刚性传动系统整个是刚性系统，特别是在矿山，冶金和交通运输等行业的齿轮传动系统中存在较大的冲击负荷扭振和碰撞，这对齿轮传动系统中另部件是有害的。

本实用新型旨在克服上述齿轮的不足，提供一种既能削峰、防振，又能起到保护齿轮传动系统另部件作用的可分式柔性齿轮，使刚性传动成为柔性传动系统。

本实用新型的特点是，该齿轮是由外齿圈①内轮毂②和弹性元件③组成，外齿圈①和内轮毂②各有 4-8 条轮辐，在轮辐之间装有 8-16 个用有机材料制成与受力面垂直的横截面是扇形或椭圆形的弹性元件③组成运动副，在外齿圈①和内轮毂②上均布有 4-8 个小孔，内轮毂②上装有挡板防止弹性体③沿轴向串动。

本实用新型是一种安全可靠柔性可分式传动齿轮，可广泛应用于齿轮传动系统，传动过程中没有扭转间隙，并对传动系统中的冲击负荷和扭转振动有很好的缓冲和削峰作用，保护传动另部件提高齿轮寿命。

图1. 弹性齿轮的局部剖面图

下面结合图1详细说明依据本实用新型进行更详细描述。

该弹性齿轮包括一个外齿圈①和内轮毂②，弹性元件③，外齿圈①和内轮毂②各有四条轮辐，轮辐之间装有用橡胶制成的扇形弹性元件③组成运动副，外齿圈①的轮辐在径向上由二盘滚动轴承④、⑤的外圈固定，内轮毂②不仅在径向固定于轴上，也固定在二盘滚动轴承④、⑤内圈内，以保证外齿圈①和内轮毂②沿轴线相对角位移，端盖⑥、⑦是确定滚动轴承④、⑤轴向位置，8 个挡板⑧用螺钉固定在内轮毂的轮辐上，防止弹性元件③沿轴向串动，外齿圈①和内轮毂②的轮辐上均布有 4 个小孔⑨用于装拆和预紧弹性元件③同时可以起散热和润滑作用。

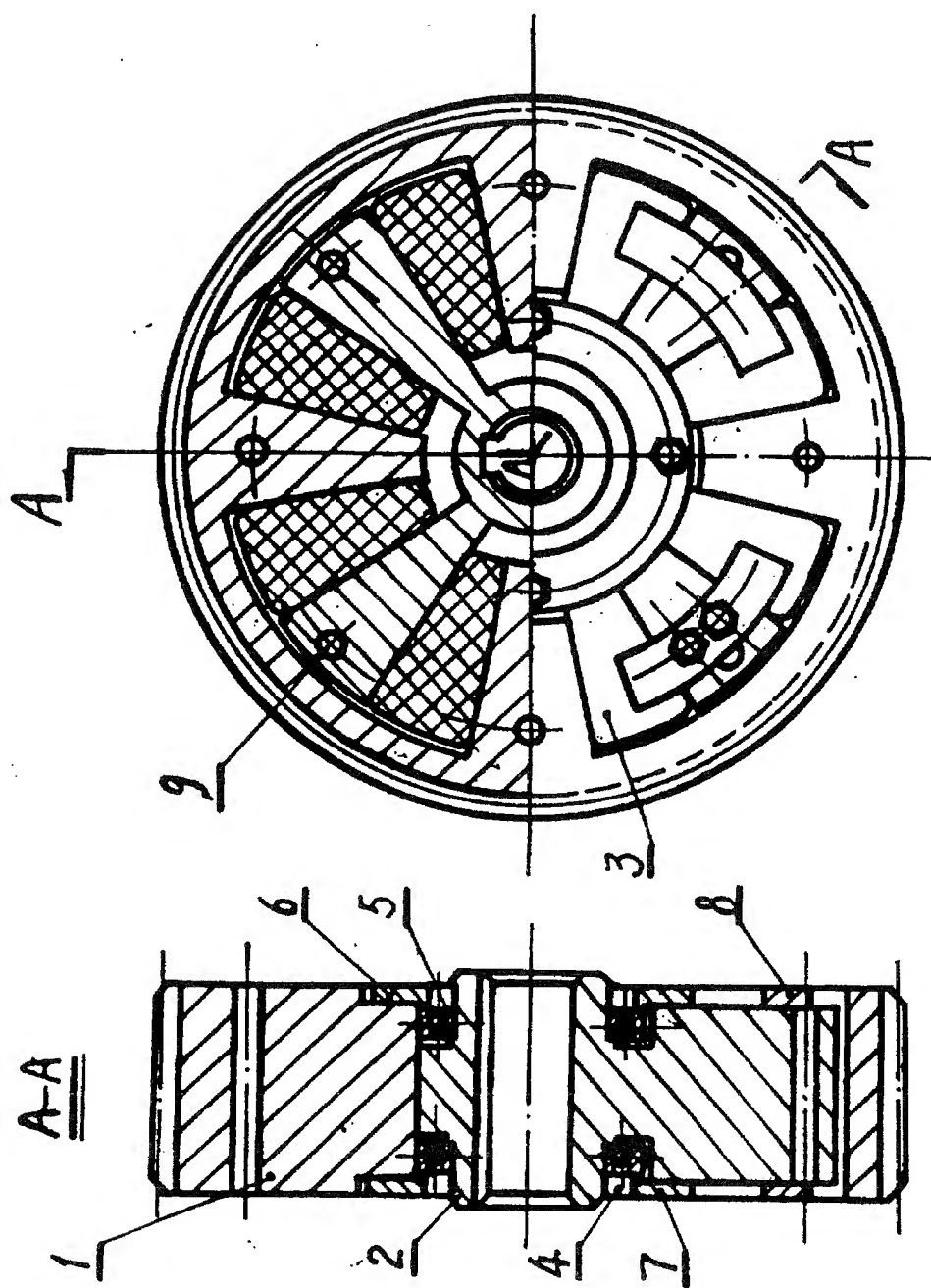


图1